

Appl. No. 09/319,688
Amdt. dated November 26, 2003
Reply to Office Action of March 27, 2002

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-11 (Withdrawn)

1 12. (Original) A process for producing a fuel electrode of a solid oxide fuel
2 cell, each cell comprising a solid electrolyte layer, a fuel electrode disposed on one surface of the
3 solid electrolyte layer, and an air electrode disposed on an opposite surface, by alternatively
4 laminating a plurality of cells, adjacent cells being electrically connected to each other, and a
5 plurality of separators for distributing fuel gas to the fuel electrode of each cell and oxidizing gas
6 to the air electrode, comprising the steps of: adding a solution of a metallo-organic compound of
7 yttrium (Y) and a solution of a metallo-organic transition-metal compound to a solution of a
8 metallo-organic compound of zirconium (Zr) to prepare a mixed solution of metallo-organic
9 compounds of Zr-Y-transition metal; mixing NiO powder and cerium oxide powder containing a
10 divalent or trivalent metal oxide dissolved therein to the mixed solution of the metallo-organic
11 compounds to prepare a slurry; and successively subjecting the slurry to hydrolysis,
12 polycondensation, pyrolysis, annealing and reduction to obtain a cermet comprising yttria-
13 stabilized zirconia (YSZ) containing a transition metal dissolved therein, nickel (Ni) and cerium
14 oxide containing a divalent or trivalent metal dissolved therein.

1 13. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said transition metal is cerium (Ce).

1 14. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said transition metal is titanium (Ti) or praseodymium
3 (Pr).

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1 15. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said metallo-organic compound is a metallic aliphatic
3 acid salt.

1 16. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said metallo-organic compound is a metallic acetyl
3 acetate complex.

1 17. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 15 wherein said metallic aliphatic acid salt is a metallic octylate.

1 18. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said fuel electrode is formed on a solid electrolyte by a
3 screen printing process.

1 19. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein a volume fraction of the cerium oxide containing the
3 divalent or trivalent metal dissolved therein in said cermet is in the range of 1% to 70%.

1 20. (Previously amended) The process for producing the fuel electrode of the
2 solid oxide fuel cell according to claim 12 wherein a concentration of Ni in said cermet is in the
3 range of 20% to 95% as a volume fraction.

1 21. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein a concentration of the transition metal in YSZ containing
3 said transition metal dissolved therein is in the range of 1 mol% to 30 mol%.

1 22. (Previously amended) The process for producing the fuel electrode of the
2 solid oxide fuel cell according to claim 12 wherein a concentration of YSZ containing the
3 transition metal dissolved therein in said cermet is in the range of 1% to 50% as a volume
4 fraction.

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1 23. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said divalent or trivalent metal oxide is one or a
3 combination of plural ones selected from the group consisting of BeO, MgO, CaO, SrO, BaO,
4 Sm_2O_3 , Y_2O_3 , La_2O_3 , Gd_2O_3 , Sc_2O_3 , Pr_2O_3 , Nd_2O_3 , Eu_2O_3 , Yb_2O_3 , Dy_2O_3 , and Ho_2O_3 .

1 24. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said cermet has a structure in which surfaces of Ni
3 particles and surfaces of cerium oxide particles containing the divalent or trivalent metal
4 dissolved therein are covered with YSZ containing said transition metal dissolved therein in a
5 form of thin films or fine particles.

1 25. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein said hydrolysis is performed using moisture in air.

1 26. (Original) The process for producing the fuel electrode of the solid oxide
2 fuel cell according to claim 12 wherein as materials of said cermet, cerium oxide powder
3 containing the divalent or trivalent metal dissolved therein, Ni powder and a metallic octylate
4 solution of Ce, Y and Zr are used, and YSZ fine particles containing the transition metal
5 dissolved therein are uniformly dispersed between the cerium oxide particles containing the
6 divalent or trivalent metal dissolved therein and the Ni particles.

1 27. (Original) The process for producing the fuel electrode of the solid fuel
2 cell according to claim 26 wherein an average particle diameter of said Ni particles is 1 μm or
3 more, the average particle diameter of said cerium oxide particles containing the divalent or
4 trivalent metal dissolved therein is 1 μm or more, and the average particle diameter of said YSZ
5 particles containing the transition metal dissolved therein is 1 μm or less.

Claims 28-33 (Withdrawn)